

# Summary of Mutual Learning



6th August 2015, Bali, Indonesia  
13th Workshop on GHG Inventories in Asia

Greenhouse Gas Inventory Office of Japan (GIO)  
National Institute for Environmental Studies (NIES)



# Outline

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  - Overview
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  - Procedure
  
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  - Outcome of sessions
    - General (cross cutting issues)
    - Agriculture sector
    - LULUCF sector
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  - Conclusion



# Background of ML programme

## Overview

### ■ Objective

- To develop capacity of inventory compilation by learning from the partner county's inventory
  - To study methodology
  - To progress inventory compilation (data collection, quality control, and etc.)
  - To improve documentation

### ■ Approach

- Bilateral learning
- Exchange of the inventories
  - document on methodology
  - spreadsheet for calculation
- Reading carefully, clarifying with questions
- Learning mutually good practices from the partner country's inventory
  - Not one sided lecture
  - Not peer review with criticism



# Expected outcomes

## ■ Issues discussed

### Estimation methodology

- Acquisition of activity data
- Adoption of emission factor
- Uncertainty analysis
- Transparency of documentation

### National system

- Institutional arrangement
- Quality assurance & quality control

### Etc.

## ■ Benefit to the parties

- Good opportunity to know other country's inventory
- Motivation for continuous inventory compilation
- Improvement of methodology, etc.



# History

	2008-2010	2010 WGIA8	2011 WGIA9	2012 WGIA10	2013 WGIA11	2014 WGIA12	2015 WGIA13
General	Trial implementation Japan- Korea	Introduction to ML (with hands on training)	-	-	-	-	Japan- Vietnam
Energy			Indonesia- Mongolia	Cambodia- Thailand	Lao PDR- Thailand	Indonesia- Myanmar	-
IP			-	Indonesia- Japan	-	-	-
Agriculture			-	Indonesia- Vietnam	China- Myanmar	China- Mongolia	Indonesia- Lao PDR
LULUCF			Japan- Lao PDR	-	-	Vietnam	Cambodia- Mongolia
Waste			Indonesia- Cambodia- Korea	China- Korea	Malaysia- Vietnam	-	Korea- Myanmar

- Trial implementation between Japan and Korea since 2008
- Introduction to ML activity on WGIA 8
- Added as official programme into WGIA since 2011
- Added a session for General (cross cutting issues) on WGIA13.



# Experienced countries

	2011 (WGIA9)	2012 (WGIA10)	2013 (WGIA11)	2014 (WGIA12)	2015 (WGIA13)
Cambodia	✓	✓			✓
China		✓	✓	✓	
India					
Indonesia	✓	✓		✓	✓
R.O.K	✓	✓			✓
Japan	✓	✓			✓
Lao PDR	✓		✓		✓
Malaysia			✓		
Mongolia	✓			✓	✓
Myanmar			✓	✓	✓
Philippines					
Singapore					
Thailand		✓	✓		
Viet Nam		✓	✓	✓	✓



- In spite of many applicant every year, not all of the parties have experienced ML yet..

# Procedure of ML

- **Preliminary process**

- **Announcement** : December 2014
- **Application** : January 2015
- **Determining of partner** : March

- **Main process**

- **Submission of materials** : April –May
- **Material Exchange** : June  
[Learning the materials :During June]
- **Comment exchange** : June
- **Answer to comments** : July
- **Sessions** : 4th August



# Comment exchange

## 1. Category: Solid Waste Disposal on Land

<input type="checkbox"/> Methodology	<input type="checkbox"/> Emission Factor	<input checked="" type="checkbox"/> Activity Data	<input type="checkbox"/> Other
<b>Question or Comment:</b>			
Could you show the amount of landfills by waste type and by year in table form?			
<b>Answer:</b>			
See attached file; it is a confidential data. Please keep a secret.			

<input type="checkbox"/> Methodology	<input type="checkbox"/> Emission Factor	<input type="checkbox"/> Activity Data	<input checked="" type="checkbox"/> Other
<b>Question or Comment:</b>			
All landfills in Japan are considered 'Managed landfill' in accordance with Waste Disposal and Public Cleaning Law. Are the specific contents of this law available in relation to the design of landfills and can it be compared with the standards of 'Managed landfill' of 2006 IPCC G/L?			
<b>Answer:</b>			
Our 'Managed Landfill' meets the standard of 2006 Guidelines. Please refer for details to the 'Ministerial Ordinance on Technical Standards for Final Disposal Sites of Municipal and Industrial Waste.' ( <a href="http://law.e-gov.go.jp/html/data/S52/S52F03102004001.html">http://law.e-gov.go.jp/html/data/S52/S52F03102004001.html</a> ).			

<input type="checkbox"/> Methodology	<input type="checkbox"/> Emission Factor	<input type="checkbox"/> Activity Data	<input checked="" type="checkbox"/> Other
<b>Question or Comment:</b>			
The country-specific value is used for "methane generation speed constant (k)". How is the uncertainty of country-specific methane generation rate value(k) estimated?			
<b>Answer:</b>			
We estimate XXXX,XXXXXXXXXXXXXXXXXXXXXXXXXXXX.			
Items	Half life (y)	K value	Uncertainty of k value (%)
Kitchen garbage	***	***	***
Waste paper	***	***	***
Waste textile (natural fiber)	***	***	***
Waste wood	***	***	***
Sludge	***	***	***

## ■ Procedures

- Reading partner's materials carefully
- Filling up **questions and comments** on "comment exchange sheet"
- Comment exchange through the secretariat
- **Answering** to the comments
- Session on the comment exchange

Comment exchange sheet



# Sessions on WGIA13

Sector	Country	Number of Participants
General	Japan	5
	Viet Nam	3
Agriculture	Indonesia	6
	Lao	3
LULUCF	Cambodia	3
	Mongolia	3
Waste	R.O.K	3
	Myanmar	3

A scene of the LULUCF sector session between Cambodia and Mongolia



- Closed sessions for limited participants
  - For very frank discussion
  - Supported by several facilitators



# Report on each session

## Overview of each country's inventory

Sector	Country	Inventory	Guidelines applied	Estimation Methodology	Emission factors	Activity data
General	Japan	2015 Submission	2006 IPCC GLs	2006 IPCC GLs and CS	CS and IPCC default values	National Statistics and provided data
	Vietnam	SNC in 2010, BUR in 2014	Revised 1996 IPCC GLs and GPGs	Revised 1996 IPCC GLs and GPGs	IPCC default values	National Statistic Books & Expert sources
Agriculture	Indonesia	Drafted BUR	2006 IPCC GLs	Tier2 (3C4.-Rice), Tier1	CS (3C4.-Rice), Default	National sources
	Lao PDR	SNC in 2013	Revised 1996 IPCC GLs	Tier1	Default	National sources
LULUCF	Cambodia	Drafted SNC in 2009 (inventory year 2000)	1996 IPCC GLs/ GPG LULUCF	Tier 1	CS, Default	Mainly from national statistics
	Mongolia	SNC in 2010 (1990-2006)	1996 IPCC GLs	Tier 1	CS, Default	Mainly from national statistics
Waste	Republic of Korea	Inventory Report in 2014	1996 IPCC GLs/ GPG2000/ 2006GLs	Tier2 for Key category, Tier 1	CS, Default	National statistics
	Myanmar	INC in 2012	Revised 1996 IPCC GLs	Tier1	Default	Estimated from population

# 1. General (cross-cutting) issues (1) (Vietnam and Japan)

## ■ Issues and solutions / Outstanding issues

### Vietnam

- Currently in the process of developing a post-BUR1 National Inventory System (NIS)
- The framework is proposed, but details such as assignment of work inside each entity needs to be determined
- Legal mandate for a NIS is crucial (by Prime Minister's Decision, but ultimately by law)

### Japan

- Some estimation relies on the voluntary provision of data from private companies, leading to a possible time-series inconsistency of data in the future



# 1. General (cross-cutting) issues (2) (Vietnam and Japan)

## ■ Good practice

### Vietnam

- There is a pathway set to a finalised NIS – learning from countries such as the Philippines, Thailand, Korea, UK, US, Japan, etc
- The NIS is considered to develop step-by-step, with improvement of data provision as first priority, followed by assignment of work and establishment of a QC/QA system
- The NIS is developed through continuous consultation with relevant ministries, which helps build a realistic and reasonable system

### Japan

- Relatively stable system in place, following trial and error in the past
- Flexibility in calculation files, by using Excel efficiently

## ■ Suggestion for future ML

- Mutual learning on general issues is a valuable exercise as well
- When Vietnam's NIS is further developed, a general session could be held again



## 2. Agriculture sector (1) (Indonesia and Lao PDR)

### ■ Issues and solutions / Outstanding issues

- May estimate N<sub>2</sub>O from N fixing crops N<sub>2</sub>O, which cannot be estimated by lack of data in SNC (LAO)
- Check possibility to estimate N leaching and loss which is not estimated currently (IDN)
- Check the primary purpose of survey of Correction Factors, considering age composition of livestock in order to encourage relevant agency to update the survey (IDN)
- Some AD are not from national statistics, data improvement is needed (LAO)

### ■ Good practice

- Laos prepared inventory by using 1996 GLs template. It make us to understand easy by using common format.
- Indonesia prepared time series data from 2000 to 2012.
- Indonesia conducted recalculation 2000 to 2005 updated from SNC.

## 2. Agriculture sector (2) (Indonesia and Lao PDR)

### ■ Follow-up activity

- Address outstanding issues (LAO, IDN)
- Improve institutional arrangement (LAO)
- Improve data collection system and survey (IDN, LAO)

### ■ Suggestion for future ML

- ML is good opportunity for each country to share experiences and make good network.
- Add “Institutional Arrangement “ section in Q&A sheet.
- Collect taking theme in the beginning session (e.g. expert judgement)
- Add a commentator from third parties and the commentator checks both country and gives an alternative solution advice in case there is a issue to need to be solved.

# 3. LULUCF sector (1)

## (Cambodia [KH] and Mongolia [MN])

### ■ Issues and solutions/ Outstanding issues

- Some categories (such as CO<sub>2</sub> emissions and removal from soil) are not estimated (Both).
- The gain-loss method is used for forest, but are planned to change using the stock change method based on NFI information in future, although data acquisition is still on the way to provide comprehensive picture (Both).
- Recheck of land classification is needed (to align with IPCC category) (KH).
- Key category analysis was not conducted, but it will be done in future (MN).
- Definition of forest by the national law does not directly represent forest land cover (MN).
- The system to make GHG Inventory was project base, but Cambodia is making permanent system.
- Cambodia may choose option making an agreement with line ministries in case simpler options do not work.
- Occasionally GHG emissions from forest fire (now treated as info. Item) has huge impact to the national total emissions and potentially accounting aspect (MN).
- It is difficult to define the anthropogenic and/or natural forest fire (Both).

## 3. LULUCF sector (2)

### (Cambodia [KH] and Mongolia [MN])

#### ■ Good practices

- In accordance with IPCC GPG LULUCF, key category analysis (level and trend assessment) were conducted for both data of 1994 and of 2000 (KH) .
- Uncertainty analysis were conducted qualitatively (KH) and step by improvement.
- Institutional arrangement for GHG inventory is established from 2012(amendment of Law on Air) (MN).
- Time series (1990-2030) estimation were implemented and recalculation of whole time series are planed when methodologies improved (MN).
- Template tables of 1996 IPCC Guidelines were applied for calculation of GHG emissions and removals (MN). It is easy to track the calculation process.
- Mongolia applied the Revised 1996 IPCC Guidelines, but Mongolia is trying to apply 2006 IPCC Guidelines(MN).
- Making a MoU with line ministries (MN)

#### ■ Follow-up activity

- Both countries agree that collection of AD is the first priority and development of CSEF is the next step.



# 4. Waste sector (1)

## (Korea and Myanmar)

### ■ Issues and solutions / Outstanding issues

- Korea obtains activity data of solid waste disposal from national statistics, compiled by MoEK, based on actual measurement at landfill site.
- Myanmar still does not have permanent national system for GHG inventory because of lack of human resource, budget and legal framework. Now they are coordinating institutional arrangement for SNC.
- Currently Myanmar does not estimate N<sub>2</sub>O emissions from human waste. In SNC, this emissions will be estimated by using protein consumption data from FAO. This solution is provided by Korea through discussion.
- According to Korean experience, development of country specific EF for industrial wastewater treatment is very important to improve inventory.
- In Myanmar cooperation from private industries is necessary for effluent measurement. Korea established good relationship with private company and got permission from them for effluent survey.



# 4. Waste sector (2)

## (Korea and Myanmar)

### ■ Good practice

#### Korea

- Inventory report of Korea is easy to understand GHG estimation method as well as background information like related regulations, legal framework and statistical system for waste and wastewater management.

#### Myanmar

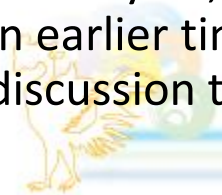
- Since Myanmar calculates GHG emissions by using IPCC spreadsheet, compilation of GHG estimation methods and result of GHG estimation are easy.

### ■ Follow-up activity

- More detailed information about solid waste disposal data collection system in Korea will be shared to Myanmar by email.

### ■ Suggestion for future ML

- Myanmar experienced ML in three sectors (energy, agriculture, and waste (in this year)) and got information for upgrading GHG inventory in Myanmar. ML on remaining categories (IPPU, LULUCF) will be done in future WGIA.
- In this year, preparation for ML started from May. But preparation should be started in earlier time (from February) for deep understanding of materials and enough discussion through email.



# Conclusion

- WGIA has introduced ML programme as one of its activities of capacity building since 2011.
- Since participants discuss counterpart's inventories and their national systems at ML sessions, which are based on comment exchange over two months as preliminary preparation, they can deeply learn actual issues on another inventory.
- Through these discussions at the WGIA, they can clarify the matter in their own inventory which should be improved.
- Since ML programme provides good opportunity to study both the counterpart's and the participants' own inventory, participants have shown interest to continuously try to participate in this programme in future WGIA.

